SCIENTIFIC NOTE

The Discovery of *Anagyrus agraensis* Saraswat in Hawaii (Hymenoptera: Encyrtidae)

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During June 1999, the first author (JWB) collected live specimens of the mealybug *Nipaecoccus viridis* (Newstead) on an ornamental shrub, *Jatropha hastata* Jack., in Honolulu, Hawaii, and shipped parasitized mummies to the second author (SVT) at the Department of Entomology, University of California, Riverside, under a U.S. Dept. of Agriculture permit. The mealybugs were determined by the first author. SVT hoped to rear the encyrtid parasitoid *Anagyrus dactylopii* (Howard) from this material for use in cross-breeding experiments with a closely related form, *A. pseudococci* (Girault). *Anagyrus dactylopii* was recorded as established in the Hawaiian Islands, where it had been purposely introduced from Hong Kong, China, in 1925 for biological control of *N. viridis* (Beardsley 1969). The mealybug material from Honolulu was held for parasitoid emergence in the quarantine laboratory at U. C. Riverside.

Unexpectedly, two species of *Anagyrus* emerged from the Honolulu material. In addition to specimens of both sexes of *A. dactylopii*, the shipment yielded several specimens of a second species of *Anagyrus* that was later determined by Dr. John Noyes at the Museum of Natural History, London, as *A. agraensis* Saraswat. This is a new insect record for the Hawaiian Islands. *Anagyrus agraensis* was described from a female from Agra, Uttar Pradesh, India (Saraswat and Mukerjee 1975). In most literature prior to 1994, it is treated under the name *Anagyrus indica* Shafee, Alam and Agarwal (1975), a junior homonym of *A. indicus* (Subba Rao 1967) (Noyes and Hayat 1984), or as *A. inopus* Noyes and Hayat (1984), a replacement name proposed prior to the rediscovery of the paper by Saraswat and Mukerjee.

Anagyrus agraensis has been known to be present on the island of Guam (Mariana Islands) for several years (Nechols and Siebert 1985), and Guam possibly is the source of the Hawaiian population. The Guam population apparently was the result of an accidental introduction, and the species was credited with bringing *Nipaecoccus viridis* under good biological control there (Nechols and Siebert 1985). Subsequently, this parasitoid was successfully introduced into Jordan and Israel to combat the same mealybug species (Meyerdirk et al. 1988, Noyes and Hayat 1994). *Anagyrus agraensis* is known from several countries in south Asia (Iran, Pakistan, India, Thailand, south China, and Indonesia) (Noyes 1994) and probably is generally distributed, as is its host, in that region.

Acknowledgments

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Literature Cited

Beardsley, J.W. 1969. The Anagyrina of the Hawaiian Islands (Hymenoptera: Encyrtidae) with descriptions of two new species. Proc. Hawaii. Entomol. Soc. 20:287–310.

Meyerdirk, D.E., S. Khasimuddin and M. Bashir. 1988. Importation, colonization and establishment of *Anagyrus indicus* (Hymenoptera: Encyrtidae) on *Nipaecoccus viridis* (Homoptera: Pseudococcidae) in Jordan. Entomophaga 33:229–239.

Nechols, J.R. and T.F. Siebert. 1985. Biological control of the spherical mealybug, *Nipaecoccus vastator* (Homoptera: Pseudococcidae): assessment by ant exclusion. Environ. Entomol. 14:45–47.

Noyes, J.S. and M. Hayat. 1984. A review of the genera of Indo-Pacific Encyrtidae (Hymenoptera: Chalcidoidea). Bull. British Museum (Nat. Hist.) (Entomology) 48:131–395.

Noyes, J.S. and M. Hayat. 1994. The Oriental mealybug parasitoids of the Anagyrini (Hymenoptera: Encyrtidae). CAB International, Wallingford, Oxon, U.K. 554 pp.

Saraswat, G.G. and M.K. Mukerjee. 1975. Records of some known and descriptions of new species of chalcids (Hymenoptera) from India. Mem. School of Entomol., St. John College. No.4:35–62.

Shafee, S.A., M. Alam and M.M. Agarwal. 1975. Taxonomic survey of encyrtid parasites (Hymenoptera: Encyrtidae) in India. Aligarh Muslim Univ. Pubs. (Zool. Series) on Indian Insect Types. 10, i–iii:1–125.

Subba Rao, B.R. 1967. Descriptions of some new species of encyrtids from India. Bull. Entomol. 8:1–7.